

Appendix G

Draft Construction Environment Management Plan (CEMP)



Health
Infrastructure

**New Maitland Hospital
SSI Stage 1
Early Works

Preliminary
Construction
Management Plan**

1 DOCUMENT MANAGEMENT

1.1 REVISION HISTORY

Version	Date	Author	Description
1.0	18.10.17	MD	Draft
2.0	19.10.17	AB	Review
3.0	19.03.18	LT	Updated Draft
4.0	23.04.18	LT	Updated Draft
5.0	14.05.18	LP	Final for Stage 1 SSI

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2 INTRODUCTION

This Preliminary Construction Management Plan (“CMP”) has been prepared for the proposed Early Works associated with the New Maitland Hospital (NMH), Metford, NSW, 2323.

This Preliminary CMP is intended to be developed into a Detailed Construction Management Plan by the Contractor when appointed to deliver the Stage 1 SSI approved Early Works.

The works included in the New Maitland Hospital SSI Stage 1 Concept & Early Works approval will form the Early Works package and will include activities such as vegetation clearing, bulk earthworks, construction preparation for internal roads and car parking, establishment of the site compound, environmental control works, some connection to utilities and installation of in-ground services.

The Stage 1 Early Works will be undertaken on site in parallel to the development of the Main Works detailed design to support a Stage 2 SSI Planning application.

2.1 PROPOSED WORKS

Stage 1 Early Works includes site clearance and preparatory works generally comprising:

- Site office and construction compound
- Connection of temporary services for the site compound and new facility (water, sewer, power, gas), with some preparatory works associated with establishing permanent services connections
- Removal of existing temporary fencing section and installation of construction fencing and signage
- General clearance of site vegetation to facilitate the hospital construction works including tree stumps, but with retention of the majority of native vegetation around the site’s perimeter in areas less impacted by historical mining activities. Asset Protection Zones (APZs) would be established for bushfire protection
- Chipping of cleared vegetation (excluding weed species) to use on site for ground stabilisation/erosion control in the period prior to the commencement of Stage 2
- Offsite disposal of surplus cleared vegetation and weeds to green waste recycling facility or another beneficial reuse
- Bulk earthworks to establish the required site levels and create a stable landform in preparation for hospital construction.
- Associated in-ground infrastructure and works may include formation of building foundations, drainage works and excavation of sub-level structures
- Site stabilisation (such as establishment of erosion and sediment controls) in preparation for Stage 2
- Site management
- Construction of internal un-sealed road ways for use during construction and in preparation for final road formation in Stage 2
- Construction of a hard, un-sealed sub-base for temporary construction parking spaces and in preparation for final carpark formation in Stage 2.

Refer to Appendix 2 for the Stage 1 Site Plan.

The responsibilities for the SSI Stage 1 Early Works contractor broadly includes:

- Act as Health Infrastructure's Principal Contractor for meeting WH&S obligations on site and management of all site holding works and environmental controls
- Undertake Site Specific Safety Inductions for all Visitors, Consultants and Contractors requiring access to the site
- Maintain an appropriately skilled and qualified First Aid Officer on site at all times whilst the site is occupied for the purpose of delivering the works
- Provide a Pre-Construction Dilapidation report that details the current structural condition of any connected infrastructure (including CCTV footage of stormwater drainage), roads and vehicle crossovers
- Undertake consultation with Maitland City Council regarding these works
- Maintain communications with representatives of the adjoining landholder (CSR and their site representative)
- Provide a detailed Construction Management Plan as required under the Stage 1 SSI approval
- Provide a detailed Construction Environmental Management Plan (CEMP)
- Provide a detailed Construction Traffic Management Plan for Maitland City Council

The Stage 1 Early Works Contractor is to manage and mitigate environmental impacts including but not limited to:

- Noise
- Dust management
- Protection of fauna and flora
- Vibration management
- Soil and erosion control
- Traffic / pedestrian management
- Waste management
- Odour control
- Safe storage of dangerous goods
- Hazardous materials management

3 SITE OPERATIONS

Health Infrastructure will be engaging an Early Works Contractor to act as Principal Contractor on behalf of Health Infrastructure. Emergency contact details and emergency procedures for the Contractor once appointed should be included in the detailed CMP.

The Works will be undertaken in accordance with the following legislative requirements and any others that must be complied with in carrying out of the works, as required:

- Protection of the Environment Operations Act 1997 and Protection of the Environment Operations Regulations.
- Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA).
- Protection of the Environment Administration Act 1991 and Protection of the Environment Administration Regulations 2012.
- Work Health and Safety Act 2001 and relevant codes of practice and Standards.
- Work Health and Safety Regulation 2017 and relevant codes of practice and Standards.
- Waste Avoidance and Resource Recovery (WARR) Act 2017.
- Environmental Planning and Assessment Act 1979.
- Heritage Act 1997.
- Local Government Act 1993.
- Soil Conservation Act 1983.

3.1 HOURS OF OPERATION

Hours of operation, unless determined otherwise by the Conditions of Consent, for construction activities are outlined below. These times are consistent with the Protection of the Environment (Noise Control) Regulation 2017.

- Monday to Friday – 7.00am to 6.00pm
- Saturdays – 8.00am to 1.00pm
- Sundays and Public Holidays – No Work

Out of hours works may be required from time to time and will be coordinated with Maitland City Council, Roads & Maritime Services and other stakeholders as required.

Deliveries to site of heavy machinery may be required out of the proposed hours of operation to conform to the overriding requirements of the Roads & Maritime Services (Roads and Maritime) and Maitland City Council.

3.2 SAFETY AND SECURITY

3.2.1 SAFETY

A site-specific WH&S management plan will be developed by the Contractor to demonstrate the commitment of the Project to Work Health & Safety (WH&S). The plan will identify the scope of work to be undertaken, the hazards associated with the work and the risk assessment processes and risk control measures to be used in the execution of the plan.

The Contractor must include procedures for identifying and managing risk and how this will be monitored and managed to ensure employer and employee compliance with these systems.

The objectives of the Site Safety Plan (SSP) include the following:

1. Maintain lost time injury reporting and review positive performance indicators;
2. Report all incidents and near misses and develop corrective action plans;
3. Conduct Senior Management and WH&S Group reviews;
4. Develop required WH&S resources;
5. Formalise regular senior management reviews of WH&S systems and implement relevant improvements;
6. Continually develop WH&S systems, policies, procedures and WH&S Plans to comply with statutory requirements and industry best practice;
7. Maintain an Audit Program to comply with system's requirements;
8. Ensure all corrective actions and non-conformances are closed out;
9. Meet or exceed the requirements of AS4801 certification and Federal Safety commission accreditation;
10. Adopt a zero-tolerance safety philosophy;
11. Provide Safety Awareness and other appropriate WH&S training;
12. Continue to implement ongoing induction procedures on all Projects;
13. Hold regular Consultative Committee meetings, maintain minutes and record actions;
14. Issue Safety Alerts to all staff and other stakeholders according to requirements;
15. Conduct weekly toolbox talks on site and maintain a register of attendees;
16. Maintain a data base of all toolbox talks.

The SSP will also address the following:

1. WH&S training – identification of WH&S training needs of all personnel, induction training, refresher training, attendance of WH&S committee personnel at consultation training etc.;
2. Incident management – identifies who will be available during and outside normal working hours to prevent, prepare for, respond to and recover from illness/ injury and incidents;

3. Site safety rules – As a minimum will include induction and safety training, PPE, Site access and security, procedures for emergency situations, illness and injury, protection of personnel and the public, work at elevated areas, safe working, hazardous materials and dangerous goods etc.;
4. Safe Work Method Statements – All activities assessed as having WH&S risks require a SWMS to be prepared and implemented.

The Head Contractor will need to comply with their duty under WHS management in accordance with the legislative requirements listed but not limited to, in Section 3.0 of this document.

3.2.2 SECURITY

Security measures must be provided to prevent unauthorised access to adjoining land and the construction work site including the safeguarding of site materials, plant and equipment.

Security measures will be in place at all times when the site is not in operation. This may include perimeter barriers, locks, surveillance systems, security lighting and motion detectors.

In the event where a building site cannot be fully secured, consideration will be given to the use of a security service to prevent unauthorised access.

3.3 PUBLIC AND PROPERTY PROTECTION

Appropriate hoarding / fencing (as specified by Health Infrastructure and the Australian Standards and Workcover requirements) will be installed to prevent public access and to maintain security for the various areas of the works.

These measures may be staged during the works. At various times, different portions of the site may be fenced.

Public and property protection measures will be reviewed at the time of contract award for the Works to ensure alignment with proposed preferred methodologies and sequencing developments and to ensure that the safety of the general public is maintained at all times during the Works.

3.4 COMPLAINTS & NEIGHBOUR MANAGEMENT

From the commencement of construction until completion, the Head Contractor will be required to maintain a community liaison officer on the project. This officer will be contactable by both a mobile phone and email and the contact details will be clearly advertised on site hoardings, community updates and the like. The Head Contractor will be required to maintain a register of complaints and to report to the Project Manager and Health Infrastructure the status of complaints on a monthly basis. Complaints that cannot be addressed by the Head Contractor will be presented to the relevant representative for resolution of the issue.

4 CONSTRUCTION METHODOLOGY FOR STAGE 1 SSI EARLY WORKS

4.1 SITE ESTABLISHMENT

Site establishment activities will include:

- Maintenance of any security measures required to make the site safe including boundary fences and access gates
- Maintenance of site compound for site personnel including site sheds and temporary car parking facilities for workers. This will include installing the required toilet / change room amenities sufficient to meet compliance for the workforce engaged on the Stage 1 Early Works
- Application for and installation of Main Hospital Construction phase temporary services including water supply connection, sewer connection, communications and electrical supply connections
- Maintenance of existing and installation of new sedimentation control fences (where required) around the area of the works to prevent sediment discharge into the surrounding waterways
- Installation and maintenance of dust monitoring if required
- Maintenance of shaker grid and wash down facilities at the exit from the site to minimise the transfer of materials from the site onto the surrounding public roads
- Installation of temporary culvert under access road to maintain stormwater overland flow conveyance from upstream catchment

4.2 REMEDIATION / VALIDATION

The Contractor will be provided background reports from JBS&G, GHD and Douglas Partners for the site prior to commencing works. These reports will provide sufficient background to inform the Contractor of the ground conditions and previous remediation works to assist in determining whether further testing and specific materials handling/waste disposal is required.

4.3 STAGING

The Contractor will prepare a staging strategy for the works, they will generally follow the sequencing outlined below:

- Site establishment including access, site compound, temporary services and fencing
- Vegetation clearance and ERSED controls including sedimentation basins
- Bulk earthworks
- In-ground drainage and utility services
- Construction of roadways and carpark/s
- Connection of permanent services for the new facility where possible (water, sewer, power, gas)

- In-ground infrastructure and works (where possible) such as formation of building foundations and excavation of sub-level structures
- Site stabilisation in preparation for Stage 2

4.4 ENVIRONMENT AND AMENITY

The contractor undertaking the Works will be required to submit for approval a comprehensive Environmental Management Plan (EMP) to ensure that all elements of the plan meet all statutory requirements, Conditions of Approval as well as the Ministry of Health's requirements.

As a minimum, the erosion and sediment controls for the Works shall be designed, installed and maintained in accordance with the requirements of Managing Urban Stormwater: Soils and Construction 'The Blue Book' 2004 (4th edition) and/or details provided by project engineering consultants.

The environmental performance of the contractor will be monitored throughout the Works. The following specific environmental management principles will be implemented on site.

4.5 NOISE AND VIBRATION

Noise from the Site shall not exceed the limits set out in the Noise and Vibration Management Plan.

No machine work will occur outside the normal working hours set unless prior approval has been given by the consent authority.

The noise and vibration from the use of any plant equipment and/or building services associated with the premises shall not give rise to an offensive noise as defined under the Noise and Vibration Management Plan.

As part of the noise mitigation treatment for the project, the contractor will be responsible for the management, checking of compliant maintenance regimes and statutory supervision of all equipment, such as making sure all trucks and machinery involved in the Works will be checked for defective exhaust systems and general servicing.

4.6 DUST

It is expected that the air quality (airborne dust and pollutants) in and around a construction site will be maintained at acceptable levels throughout the construction period.

To control dust generation where necessary, water will be sprayed at the source of origin and surrounding areas to prevent airborne dust particles migrating into the surrounding environment. Management of dust prevention is to be developed by the contractor and agreed by the project stakeholders.

Additional precautions that will be implemented during the Works include the covering of all haulage trucks with tarpaulins and monitoring of weather conditions (including wind).

Management and contingency plans will be developed to prevent any foreseeable impacts from dust.

4.7 ODOUR CONTROL

All plant and machinery involved in the Works will be regularly serviced and checked for exhaust emissions and catalytic converters.

4.8 PROTECTION OF TREES

The retention and protection of vegetation on the site will be met as per the conditions of approval.

The Contractor will be required to prepare a detailed site-specific Construction Management Plan. This Plan will need to demonstrate the measures that will protect trees and vegetation being retained under the development works.

Recommendations and requirements for vegetation protection are documented in the Stage 1 Environmental Impact Statement.

4.9 VEGETATION REMOVAL

All vegetation clearance is to be identified and agreed prior to work commencing and if trees/vegetation/habitat is required to be removed outside the approved areas then a qualified and suitably skilled arborist and ecologist will need to be engaged by the Contractor prior to further vegetation clearance proceeding.

Vegetation clearance works will broadly include:

- Identification of which areas are to be cleared and where protection measures are required to retain vegetation, including undertaking pre-clearance surveys as required by any related conditions of consent
- Establishment of tree and vegetation protection measures as required
- Clearance of low laying vegetation
- Clearance of larger vegetation such as bushes and trees
- Establishment of additional retention, sedimentation and erosion controls as required

4.10 STORMWATER RUN-OFF

The Head Contractor will be required to prepare a detailed Stormwater Management Plan prior to commencement of the works. The plan will cover all aspects of stormwater and sediment management and control during construction.

Refer to Wood & Grieve ERSED plans within the Integrated Water Management Plan for further detail of the proposed stormwater, erosion and sediment controls.

5 TRAFFIC, ACCESS AND PARKING

As part of its Construction Management Plan, the Contractor appointed to undertake the Stage 1 works will be required to submit a Traffic and Pedestrian Management Plan for approval prior to commencement of works. This would include consultation with Maitland City Council and Roads and Maritime as appropriate.

The NMH Traffic consultant GTA, has developed a Preliminary Construction Traffic Management Plan in line with the SEARs requirements. Refer to plan in Appendix A.

5.1 PARKING OF WORKER AND CONSTRUCTION VEHICLES

Parking of all construction vehicles is proposed to remain entirely within Lot 7314.

5.2 CONSTRUCTION ENTRY / EXIT

Construction site access will be at the North West corner of Lot 7314 via the new roundabout being constructed at the Fieldsend Street/Metford Road intersection as part of Health Infrastructure's Enabling Works. Traffic controllers will be in place during working hours to ensure safe construction traffic movements.

The Stage 1 Early works package includes internal roadways which will facilitate a secondary access and egress point. This entry / egress point will be used only as a left hand turn in, and left hand turn out during construction phases.

5.3 PEDESTRIAN PROTECTION

Traffic controllers will be in place during working hours to ensure safe pedestrian movements. The work site will need to be left in a safe condition at the end of each shift and adequate signage is in place directing pedestrians appropriately.

6 WASTE MANAGEMENT

6.1 WASTE MANAGEMENT / RECYCLING PRINCIPLES

The site has been designed to create a balanced cut and fill. This avoids the need for large quantities of material to be imported or exported from the site.

Where possible any material generated from the Works will be recycled apart from selected hazardous materials such as asbestos, SMF, PCBs and the like and general waste from the site office. The contractor will be committed to achieving compliance with the EPA guidelines.

A site audit report by JBS&G has been undertaken. If necessary, further detailed sampling and reporting will be carried out prior to any works occurring on site.

This report will be used as the basis for identifying and managing the removal of any contaminated materials identified during the Works.

'Unexpected finds' protocols will be implemented to manage any materials identified during works.

The Contractor's Waste Management Plan will include detail on different types of waste expected, how the differing types of waste will be separated for recycling, quantities of each type expected to be generated and conditions of disposal including where material will be sent, how it will be delivered, licencing conditions and record keeping for up to 7 years.

6.2 STORAGE OF DANGEROUS GOODS

Dangerous goods (such as petrol, diesel, oxy-acetylene, oils etc.) will be stored in a lockable compound with sufficient ventilation, bunding, hard surface and located away from waterways and drains in accordance with relevant codes of practice and standards. Material safety data sheets on all of these flammable and potentially harmful liquids will be provided by the contractor undertaking the Works.

7 APPENDIX 1 – PRELIMINARY CONSTRUCTION TRAFFIC MANAGEMENT PLAN

Reference: #N124970

04 March 2018

Health Infrastructure
c/o Savills Project Management
1 Farrer Place
SYDNEY NSW 2000

Attention: Leigh Tunbridge (Senior Project Manager)

Dear Leigh

**RE: NEW MAITLAND HOSPITAL
PRELIMINARY CONSTRUCTION TRAFFIC MANAGEMENT PLAN**

It is understood that Health Infrastructure are adopting a staged infrastructure application for the proposed New Maitland Hospital (NMH) under Section 115ZD (1) of the EP&A Act as follows:

- Stage 1 - Concept design, site clearance and preparatory works
- Stage 2 - Detailed design, construction and operation of the hospital.

GTA Consultants (GTA) has prepared this preliminary Construction Traffic Management Plan (PCTMP) on behalf of Health Infrastructure to address the potential construction impacts of the Stage 1 early works on the surrounding transport network.

Overview

On site early works are the works being sought under Stage 1 of the staged infrastructure application (EIS).

Stage 1 includes site clearance and preparatory works generally comprising:

- site office and construction compound, including connection of compound to services
- connection of temporary and permanent services for the new facility (water, sewer, power, gas)
- removal of existing temporary fencing and installation of construction fencing and signage
- general clearance of site vegetation within the footprint of hospital construction works including tree stumps, but with retention of the majority of native vegetation around the site's perimeter in areas less impacted by historical mining activities. Asset Protection Zones (APZs) would be established for bushfire protection
- chipping of cleared vegetation (excluding weed species) to use on site for ground stabilisation/erosion control in the period prior to commencement of Stage 2
- offsite disposal of surplus cleared vegetation and weeds to green waste recycling facility or another beneficial reuse
- bulk earthworks to establish the required site levels and create a stable landform in preparation for hospital construction
- associated in-ground infrastructure and works may include formation of building foundations, drainage works and excavation of sub-level structures

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- site stabilisation (such as establishment of erosion and sediment controls) in preparation for Stage 2
- site management
- construction of internal un-sealed road ways for use during construction and in preparation for final road formation in Stage 2
- construction of a hard, un-sealed sub-base for temporary construction parking spaces and in preparation for final carpark formation in Stage 2.

Subject Site

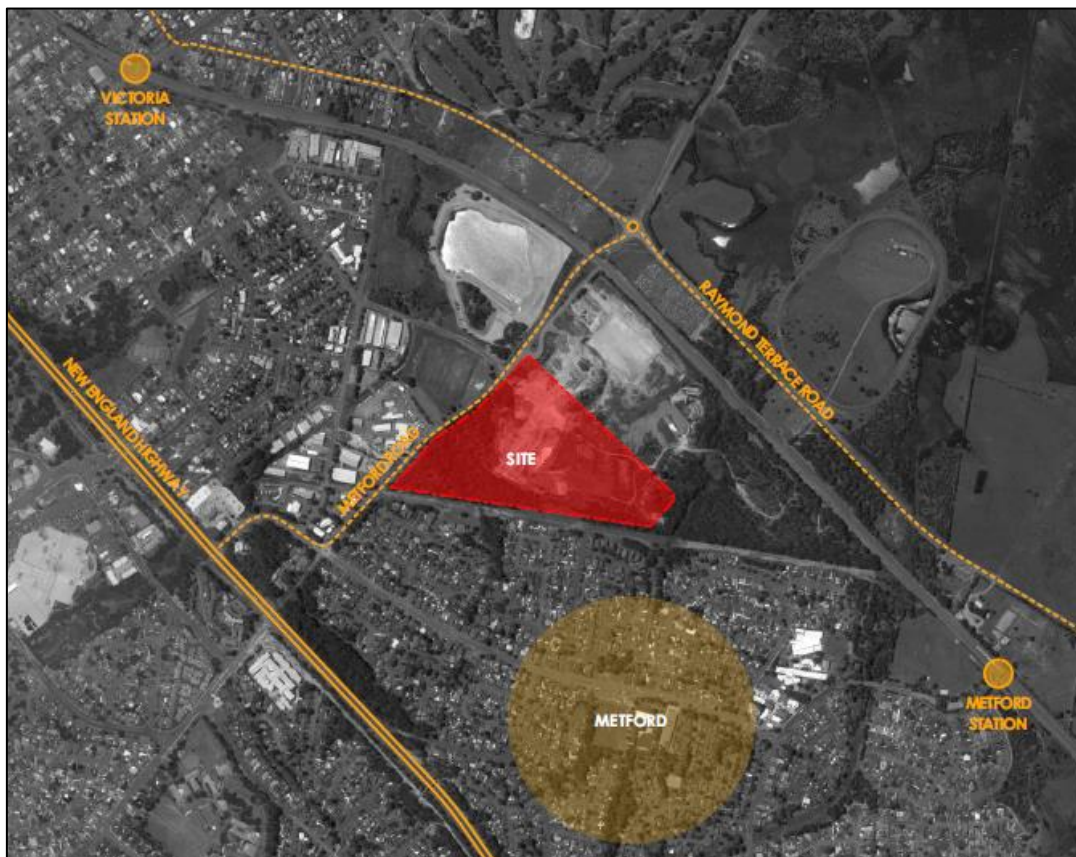
It is proposed that the NMH will be located on Lot 7314 and Part Lot 401 within the south-western portion of the 'Metford Triangle' along Metford Road, Metford. The site has a western frontage of 500 metres to Metford Road. The site currently has a land use classification of RU2 Rural Landscape and is generally cleared and disturbed land.

The surrounding properties include:

- Council Sports Fields opposite the site on the corner of Fieldsend Street and Metford Road.
- Council's Depot on Metford Road.
- Redundant brickworks site to the northeast of the site.
- Bushland and residential to the south of the site.

The location of the subject site and its surrounding environs is shown in Figure 1.

Figure 1: Subject Site and Surrounding Environs



Source: Fitzpatrick+Partners 16 February 2018

Road Network

Metford Road

Metford Road functions as a sub-arterial road and is aligned in a north-east, south-west direction on the western boundary of the site. It is a two-way road with one traffic lane in each direction, configured with a nine-metre-wide carriageway. Unrestricted kerbside parking is generally permitted south of Fieldsend Street however, no kerbside parking is permitted north of Fieldsend Street.

Fieldsend Street

Fieldsend Street functions as a local road and intersects Metford Road at the northern corner of the site. It is aligned in a north-west, south-east direction and is two-way with one traffic lane in each direction. No kerbside parking is permitted near the site.

Council has identified road, cycleway and pedestrian infrastructure upgrades for Fieldsend Street in their Capital Works Program 2016-2020. This includes the construction of a cycleway between Metford Road and Brunswick Street, as well as pedestrian footpaths between Metford Road and Turnton Road. The cycleway is currently under construction however the project completion dates are currently unconfirmed.

Fieldsend Street also provides access to the Council Sports Fields on the corner of Fieldsend Street and Metford Road.

New England Highway

New England Highway is classified as a State road in the Roads and Maritime Schedule of Classified Roads and State and Regional Roads versions 2011/1. Near the site it is aligned in a north-west, south-east direction and is two-way with two traffic lanes in each direction. No kerbside parking is permitted.

Raymond Terrace Road

Raymond Terrace Road is classified as a State road in the Roads and Maritime Schedule of Classified Roads and State and Regional Roads versions 2011/1. Near the site it is aligned in a north-west, south-east direction and is two-way with one traffic lane in each direction. No kerbside parking is permitted.

Chelmsford Drive

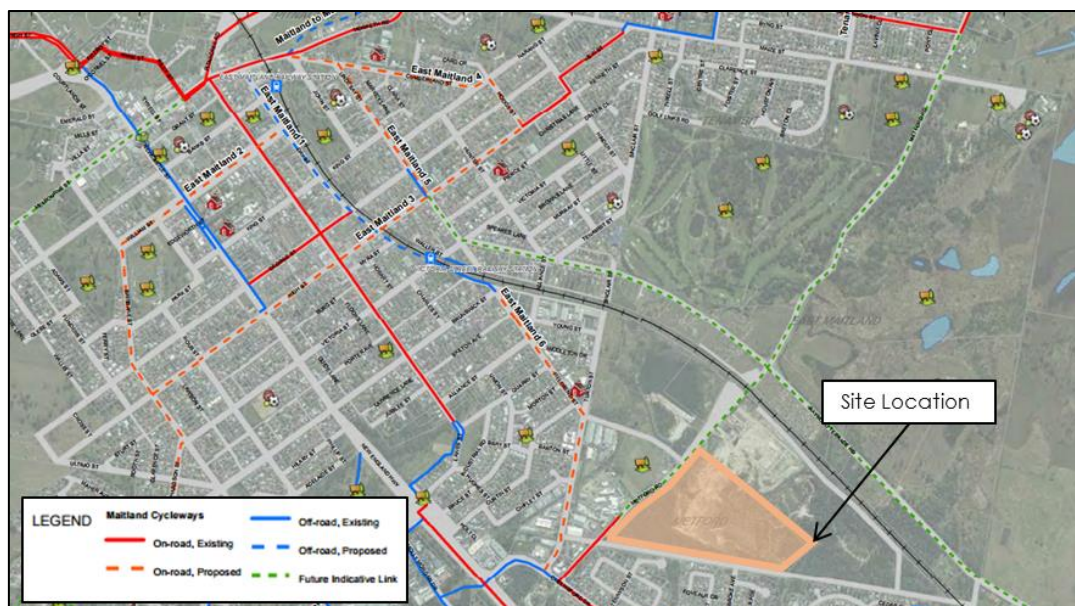
Chelmsford Drive is classified as a sub-arterial road and is aligned in the north-west, south-east direction. It is a two-way road separated by a median, with one traffic lane as well as one bicycle lane and one parking lane in each direction east of Metford Road and two traffic lanes in each direction west of Metford Road, configured in a 20 meters wide carriageway. Unrestricted kerbside parking is permitted on both sides of the road east of Metford Road, and no kerbside parking is permitted on Chelmsford Drive west of Metford Road.

Public Transport

Bus services provide local connections to the outer areas of Metford, including East Maitland and Thornton.

Victoria Street Railway Station is located around one and a half kilometres from the NMH site. It is part of the Hunter Line, with services alternately running from Newcastle to Telarah, Dungong and Scone. Services at Victoria Street Railway Station are generally provided every 30 minutes.

Figure 3: Maitland bike network



Basemap Source: <https://www.maitland.nsw.gov.au/UserFiles/File/Maitland%20Bicycle%20Plan%20and%20Strategy%202014.pdf> (accessed 5 June 2017)

Construction Traffic Management

The preparation of the PCTMP for stage 1 of the NMH has been completed on the basis of the following aspects which are described in more detail below:

- overall principles of construction traffic management
- staging schedule
- work hours
- construction traffic generation
- truck routes
- construction traffic impact
- potential mitigation measures during construction.

Overall Principles of Construction Traffic Management

The overall principles of traffic management during construction activity include:

- minimising the impact on pedestrian movements
- maintaining appropriate public transport access
- minimising the impact to existing traffic on adjacent roads and intersections
- minimising the loss of on-street parking
- maintaining access to/ from any adjacent properties
- restricting construction vehicle movements to designated routes to/ from the site
- managing and controlling construction vehicle activity near the site
- ensuring construction activity is carried out in accordance with Council's approved hours of works.

Staging Schedule

Construction staging is unknown at this time and will be confirmed when a contractor has been appointed.

Work Hours

Construction work would be undertaken in accordance to development consent conditions. The typical work hours are expected to be:

- Monday to Friday: 7am to 6pm
- Saturday: 8am to 1pm
- Sundays and public holidays: No work.

The contractor will be responsible for instructing and controlling all sub-contractors regarding the hours of work. To minimise disruption to daily traffic and disturbance to surrounding land owners and businesses. It may be necessary to carry out some work outside of these hours, if this occurs, prior notice would be given to the community if any works are planned to be undertaken outside typical hours. Such activities would include delivery of cranes, large plant or equipment to the site.

Worker Induction

All workers and subcontractors engaged on-site would be required to undergo a site induction. The induction should include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, Work Health and Safety (WHS), driver protocols and emergency procedures.

Any workers required to undertake works or traffic control within the public domain would be suitably trained and covered by adequate and appropriate insurances.

Loading Zone

Any loading zones will be contained on site to be determined later by the contractor.

Site Access

Site access will be provided via the upgraded Metford Road/ Fieldsend Street/ site access roundabout (construction works for the roundabout are currently under construction and were approved as part of the Enabling Works package. It is noted that the upgraded intersection has been designed to cater for truck movements. All construction vehicles will enter and exit the site in a forward direction.

On-street Works Zone

It is not anticipated that an on-street Works Zone would be required during the construction works.

If a Works Zone is required, the contractor would be required to obtain approval from the relevant authority (Council, Roads and Maritime Services).

Heavy Vehicle Generation

Heavy vehicle traffic would mainly be generated by activities associated with the following:

- Delivery of construction materials
- Delivery and removal of construction equipment and machinery.

It is estimated that during peak early works construction activities, around 30 heavy vehicles would be required on-site per day, resulting in around 60 two-way heavy vehicles movements (in and out) of the site per day. The heavy vehicle movements are likely to be spread through

the day, however, in the worst-case assessment it has been assumed that 20 per cent, or six vehicles (12 two-way vehicle movements) would occur during the peak hour.

The main access routes for construction vehicles are from the New England Highway and Raymond Terrace Road. The main access roads are State roads, which carry high traffic volumes and any additional construction vehicle traffic would have a negligible traffic impact, as this additional construction vehicle traffic would be within the range of daily variation in traffic on these routes.

The movement of materials should be managed through the scheduling of deliveries and availability of fleet to minimise the number of haulage and delivery vehicles during peak periods and on weekends.

Light Vehicle Generation

Light vehicle traffic generation would be largely generated by construction worker traffic movements to and from the site.

It is expected there would be around 50 construction workers, working during the early works. Due to the sites location, the worst-case scenario that 100 per cent of workers would drive to the site has been assumed, therefore, up to 50 light vehicles per day would be expected. As a worst-case scenario assessment, 50 vehicles may arrive in the AM peak and depart in the PM peak.

Parking for construction workers would be provided within the NMH site

Summary of Construction Traffic Generation

A range of construction vehicles are likely to be generated by the proposed construction activities these would include:

- larger equipment transport vehicles for the delivery and pickup of equipment and materials
- medium rigid vehicles for export and input of required materials
- small and medium rigid vehicles, vans and couriers for materials delivery
- light vehicles for employees to travel to and from the site.

The estimated number of construction vehicles per day is detailed in the Table 2.

Table 2: Daily construction traffic volumes (worst-case)

Vehicle type	Total number of vehicles per day (on average)	Total peak vehicle movements per day (on average)
Light vehicles	50	100
Heavy vehicles/ Trucks	30	60
Total	80	160

Table 2 shows that during peak construction of the early works, there could be up to a total of 80 vehicles arriving and departing the site per day.

All intersections near the site are expected to continue to operate at existing levels of service during the overall construction period.

Truck Routes

The movement of all trucks will be restricted to designated truck routes and confined to the State Road network where feasible. Truck routes to/ from the site have been identified with

the aim of minimising the impact of construction traffic on the local road network near the site.

The directional distribution and assignment of traffic generated by the construction works will be influenced by several factors, most notably the origin/ destination of materials, configuration of access points to the site and the configuration of the arterial road network in the vicinity. No queuing or marshalling of trucks will be permitted on public roads.

The approach/ departure routes are illustrated in Figure 4 and include the following:

South/ Sydney

- Pacific Motorway (M1), Weakleys Drive, New England Highway, Chelmsford Drive and Metford Road.

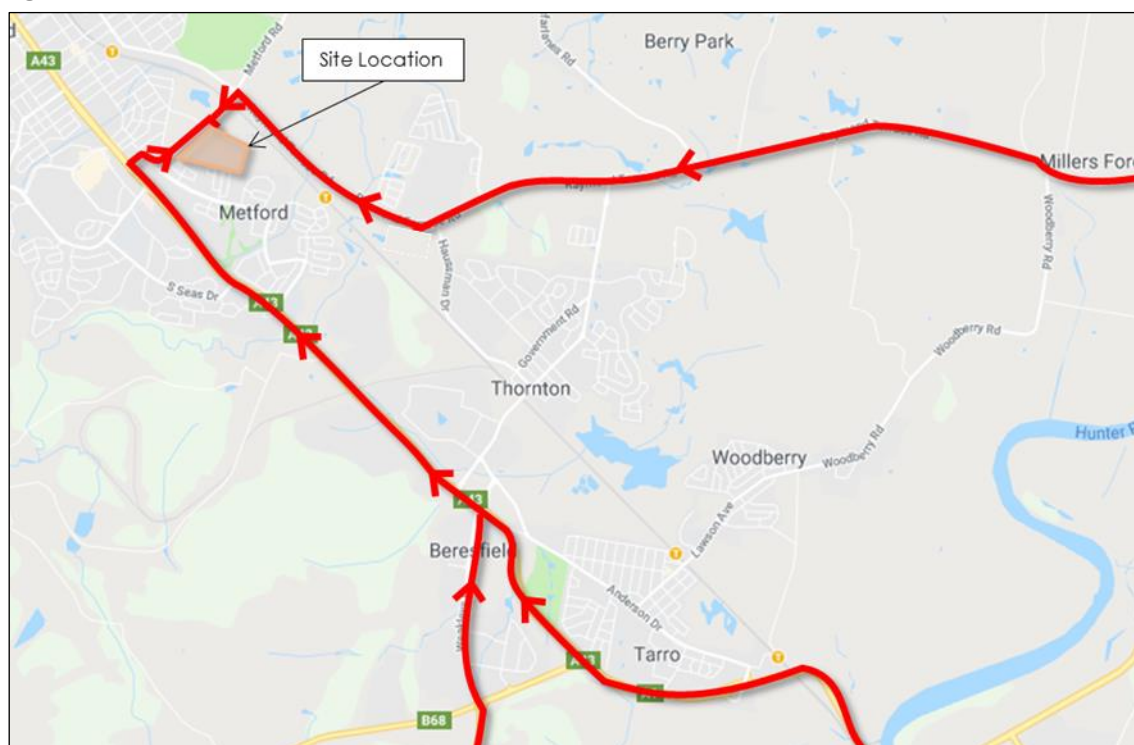
East/ Newcastle

- Pacific Highway (A1/A43), New England Highway, Chelmsford Drive and Metford Road.

North

- Pacific Highway (A1), Richardson Road, Adelaide Street, Seaham Road, Raymond Terrace Road and Metford Road.

Figure 4: Construction Vehicle Routes



Basemap source: Google Maps

Construction Traffic Impacts

The additional 80 vehicles per day expected during construction of the early works is expected to have a minimal impact on the surrounding road network, with most vehicles (50 vehicles) being related to construction workers who would likely arrive and depart outside of peak hours. These vehicles will be parked on the NMH site.

There is not expected to be any impact to pedestrians as there are no footpaths currently adjacent to the site.

There are no bus stops located within the proposed work area. Therefore, no impacts to bus services is expected.

No adverse effects are expected from the movement of heavy vehicles through adjacent council areas.

Potential Mitigation Measures During Construction

The following proposed traffic management principles would be adopted during the construction period:

- A traffic management plan would be developed by the contractor and incorporated into the Construction Environmental Management Plan (CEMP).
- Disruption to all road users during the construction period would be kept to a minimum.
- Construction and delivery vehicles entering or leaving the NMH site compound would use arterial roads wherever possible. Vehicle deliveries would be restricted to nominated times within the approved Construction Traffic Management Plan (CTMP).
- A detailed CTMP would be developed by the contractor.

Summary of Construction Activates

The construction stage is estimated to generate up to 30 heavy vehicle movements per day during the peak construction of the early works. It is recommended that heavy vehicles movements take place outside the peak periods.

It is estimated that during peak construction there would be up to 50 light vehicles per day. It is likely that construction workers would access the site before the weekday AM peak hour; however, as a worst-case scenario case assessment it has been assumed that 50 light vehicles would arrive in the AM peak and depart in the PM peak.

The overall impact of construction vehicles on the surrounding road network during the peak periods of construction it is expected to be minimal.

It is recommended that a detailed CTMP be prepared by the nominated contractor.

I trust this PCTMP provides a sufficient assessment of the expected construction traffic, transport and access implications of the NMH Stage 1 early works.

Naturally, should you have any queries or require any further information, please do not hesitate to contact me in our Sydney office on (02) 8448 1800.

Yours sincerely

GTA CONSULTANTS



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Associate

8 APPENDIX 2 - STAGE 1 SITE PLAN



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